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ABSTRACT

A study investigated whether developmental patterns found in an earlier study were related to spelling and if salient structural features of words for word recognition contributed to spelling performance. Word recognition (decoding) and spelling data were taken from the normative sample of the Kaufman Test of Educational Achievement. Data were available on approximately 100 students for both word recognition and spelling tests at each grade level (1 through 6). Results of the previous study indicated that structural features contributed greatly to early readers' single word recognition and diminished considerably for older, more competent readers. An identical pattern was noted in the present study for structural features of words and spelling--structural features contributed greatly to early readers' spelling performance and diminished considerably for older, more competent readers. Further research is exploring the contribution of individual structural features of words to determine if the salient orthographic variations in individual children's spelling performance parallel those identified in single word decoding. (RS)

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Graphemic Features of Single Word Recognition and Spelling Performance

A. Purpose of the study

This paper reports the results of a second investigation, which is a continuation of an earlier study (Willson & Rupley, 1993) focusing on the exploration of the contributions that structural features of words make to single word recognition. The first study found that structural features (phonemes, consonant blends, consonant digraphs, r-controlled vowels, vowel digraphs, and silent markers) of words enhanced or inhibited identification of single words for children in varying stages of reading development (Chall, 1983). Furthermore, there was an indication of a developmental shift in linguistic features of words related to successful word recognition. Specifically, this study investigated whether such developmental patterns were related to spelling and if salient structural features of words for word recognition contributed to spelling performance.

B. Theoretical framework

The general theoretical perspective followed in this study was that single word recognition presents to the child a task in which the structural features of the word are used as a means in problem solution that is central to accessing working memory to evoke either phonological representations or whole word recognition (Adams, 1990). For young children, increases in the complexity of structural features of words requires greater sophistication in the application of generalizations related to phonemic features of the stimulus word. In earlier studies we found that graphemic features of words showed the same pattern of effect across children in grades one through six on word recognition performance. What changed across levels was the relative importance of the structural features variables.

In the present study we added a spelling performance variable in our model. Although spelling requires either production of the letter

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combinations or their retrieval from memory for recognition of acceptable spelling, similar processes may be operating in relationship to word recognition, where structural features of words play a varying role in word recognition competency. We hypothesized that if word recognition demands on working memory require decoding of graphemic structural features to sound; then, a knowledge of orthographic patterns of various word recognition elements in working memory should contribute to spelling performance. We felt that developmental patterns for children's recognizing words and spelling words with similar graphemic structural features could emerge and possibly share comparable features. A methodical study of orthographic structural features productions or deficits in production was viewed as a means to examine some of the possibly shared cognitive tasks involved in recognizing and spelling words.

C. Methods

Procedure Each word in the decoding list of words and each word in the spelling list of words was analyzed by linguistic experts to identify the following: number of phonemes, number of consonant blends, number of consonant digraphs, number of r-controlled vowels, number of vowel digraphs, and number of silent markers. Multiple regression was employed to (1) evaluate the amount of variance associated with spelling performance and structural features of the spelling words and (2) explore the amount of variance explained by the students' word recognition performance and spelling performance at grades one through six.

D. Data sources

Sample. Word recognition (decoding) and spelling data were taken from the normative sample of the Kaufman Test of Educational Achievement (KTEA) (Kaufman & Kaufman, 1989). Data were available on approximately 100 students for both word recognition and spelling tests at each grade level (one through six).

Instruments. The word recognition test (Reading Decoding) requires students to identify a word pronounced by the administrator. The words were taken from lists of words used at each grade level and include both regular and irregular words. The Spelling Test also contains both regular and irregular words and consists of 50 words at each of the grade levels.

E. Results

Table 1 presents the proportion of variance accounted for by structural features only and when Reading Decoding is added to the model. For grades one, two, and three, structural features accounted for a large proportion of the variance and total decoding score only added from 3 to 11 percent to the model. However, for grades four through six, structural features contributed little to spelling performance and total decoding score added from 26 to 59 percent to the model.

F. Educational importance

This study was an extension of our earlier investigations of structural features of words and decoding into the orthography of spelling. In previous studies we found that structural features contributed greatly to early readers' single word recognition and diminished considerably for older, more competent readers(e.g., 1st grade 85% of single word recognition accounted for by structural features of words and at 6th grade 7% percent of the variance accounted for by structural features of words). An identical pattern was noted in the present study for structural features of words and spelling. Structural features of words accounted for 68 percent of first graders spelling performance and diminished to five percent for sixth graders. Similar research (Samuals, LaBerge, & Bremer, 1978; Stanovich, 1990) has advanced the concept of automaticity and encapsulation in word recognition; which these data also support for the acquisition of spelling capabilities. Although it is not clear which one will facilitate the other, there is a dynamic relationship between them.

We are presently conducting research to explore the contribution of individual structural features of words to determine if the salient orthographic variations in individual children's spelling performance parallel those we have identified in single word decoding.

TABLE 1

Regression of structural components and decoding on spelling performance by grade level

	% of variance accounted for by structural features and decoding	
Grade	Structural Features	Decoding Added
1	.68	.03
2	.58	.10
3	.48	.11
4	.34	.26
5	.07	.58
6	.05	.59